



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/559,152

04/26/2006

Holger Dziallas

034166.006US

9050

25461 7590 11/28/2008  
SMITH, GAMBRELL & RUSSELL  
SUITE 3100, PROMENADE II  
1230 PEACHTREE STREET, N.E.  
ATLANTA, GA 30309-3592

EXAMINER

CHUANG, ALEXANDER

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,152	<b>Applicant(s)</b> DZIALLAS ET AL.	
	<b>Examiner</b> Alexander Chuang	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 14-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 1795

**MEMBRANE-ELECTRODE UNIT FOR DIRECT METHANOL FUEL CELLS AND  
METHOD FOR THE PRODUCTION THEREOF**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 24<sup>th</sup> 2008 has been entered. Claims 1-13 have been canceled. Claims 14-24 have been added.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 14 and 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Tabata et al (US 2002/0071980 A1).

Tabata et al disclose a method where the both sides of the electrolyte membrane are coated by catalyst (paragraph 59). The catalyst is also coated on the electrode (paragraph 60).

Art Unit: 1795

As to claim 17 and 18, the reference discloses the catalyst content should be 0.1-0.5 mg/cm<sup>2</sup> (paragraph 42).

5. Claims 14 and 18-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Wittpahl et al (US 7,141,270 B2).

As to claim 14, Wittpahl et al disclose a method where a both anode and cathode catalyst layers are applied directly to the polymer membrane (4: 38-41). A second catalyst layer is applied to the anode gas diffusion layer (3: 41-43).

As to claim 18, the cathode catalyst layer load is 0.2 mg Pt/cm<sup>2</sup> (7: 49-51)

As to claim 19, the anode catalyst comprises of supported or unsupported precious metal blacks (platinum black) (5: 66-67 and 6: 1-3).

As to claim 20, cathode catalyst comprises of platinum (6: 4-5).

As to claim 21, the anode gas diffusion substrate was coated with catalyst ink and dried at 90° C (7: 52-55). The cathode side of the membrane was coated with catalyst ink and dried at 70° C (7: 59-61). Membrane is coated with anode catalyst and dried at 70° C (7: 66 and 8: 1-2). Finally, the membrane is combined with the gas distribution layers (8: 8-10).

As to claim 22, the membrane is rinsed in hot water having a temperature of 80° C (7: 61-63 and 8: 2-4).

As to claim 23 and 24, the disclosed method is for producing a membrane electrode unit for a direct methanol fuel cell (1: 7-10).

***Claim Rejections - 35 USC § 103***

6. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata et al (US 2002/0071980 A1) as applied to claims 14 and 17-18 above, and further in view of Yamashita et al (US 5,441,822).

Tabata et al disclosed the method for making a membrane electrode assembly as discussed above; however, the reference does not explicitly disclose the thickness of the catalyst layers. Yamashita et al disclose the thickness of the catalyst layer is within the range of 0.05 to 0.5 mm (50 to 500  $\mu\text{m}$ ) (5: 30-35). Figure 5 shows the relationship between catalyst thickness and cell voltage (5: 36-46). The fuel cell performance increases and then decreases after a certain thickness (figure 5 and 5: 36-39). Therefore, it would have been within the skill of one of ordinary skill in the art to adjust the catalyst thickness to yield an optimum fuel cell voltage. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata et al (US 2002/0071980 A1) as applied to claims 14 and 17-18 above, and further in view of Kindler (US 5,992,008).

Tabata et al disclosed the method for making a membrane electrode assembly as discussed above; however, the reference does not explicitly disclose the anode catalyst loading. Kindler et al disclose a fuel cell with an anode catalyst loading of 1  $\text{mg}/\text{cm}^2$  (2: 32-39). The reference states to reduce cost of catalyst, the minimum amount of catalyst is desirable (1: 44-47). Therefore, it would have been obvious to one of ordinary skill in the art to use an anode

Art Unit: 1795

catalyst loading 1 mg/cm<sup>2</sup> in the fuel cell of Tabata et al, because Kindler teaches catalyst loading should be minimized to reduce cost.

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 14, 21, 23-24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, and 8 of U.S. Patent No. 7,141,270 B2.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the '270 recites all the limitations except specifically coating a “first side” and “second side” of the ionomer membrane, however, one of ordinary skill in the art would recognize that to place catalyst on both the anode, cathode, and the membrane, both sides (first side and second side) of the membrane would require a catalyst coating.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Chuang whose telephone number is (571)270-5122. The examiner can normally be reached on Monday to Thursday 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC  
Alexander Chuang  
Patent Examiner GAU 1795  
November 21<sup>st</sup> 2008

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 1795